

FABRICATION OF A HIGH FILL RATIO REFLECTIVE SPATIAL LIGHT MODULATOR WITH HIDDEN HINGE

ABSTRACT OF THE DISCLOSURE

[0101] Fabrication of a micro mirror array having a hidden hinge that is useful, for example, in a reflective spatial light modulator. In one embodiment, the micro mirror array is fabricated from a substrate that is a first substrate of a single crystal material. Cavities are formed in a first side of the first substrate. Separately, electrodes and addressing and control circuitry are fabricated on a first side of a second substrate. The first side of the first substrate is bonded to the first side of the second substrate. The sides are aligned so the electrodes on the second substrate are in proper relation with the mirror plates that will be formed on the first substrate and that the electrodes will control. The first substrate is thinned to a pre-determined, desired thickness, a hinge is etched, a sacrificial material is deposited, the upper surface of the first substrate is planarized, a reflective surface is deposited to cover the hinge, a mirror is released by etching and the sacrificial layer around the hinge is removed to release the hinge so the hinge can rotate about an axis in line with the hinge.

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